

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 01-220828

(43)Date of publication of application : 04.09.1989

(51)Int.Cl.

H01L 21/30  
G03C 5/24  
G03C 11/00  
G03F 7/00  
H01L 21/304

(21)Application number : 63-047196

(71)Applicant : NISHIKAWA MASARU  
HOYA CORP

(22)Date of filing : 29.02.1988

(72)Inventor : NISHIKAWA MASARU  
NAKAGAWA KAZUMICHI  
YAMAGUCHI YOICHI

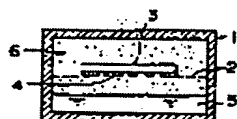
## (54) RESIST PATTERN FORMING, RESIST ELIMINATING AND SUBSTRATE WASHING METHODS

(57)Abstract:

PURPOSE: To simplify by a process by dipping a substrate for which exposing treatment is finished, or a substrate on which resist is adhered, or a substrate on which foreign matter sticks, in supercritical flow fluid for a specified period, and performing developing or resist eliminating or substrate washing.

CONSTITUTION: PMMA is spread on the surface of a disc type silicon wafer, which is exposed by an electron beam lithography equipment. At the time of developing, a substrate 3 for which exposing is finished is mounted on a mesh type retainer in a high pressure vessel 1, and high pressure carbon dioxide is introduced in the state where the high pressure vessel is kept at the critical temperature or below. The carbon dioxide exists in the state where a liquid layer part 5 and a gas layer part (vapor part) 6 are separated. By a temperature controlling means, the temperature of the high pressure vessel is raised at 46° C, and then the carbon dioxide in the high pressure vessel 1 turns to supercritical flow 7.

This state is kept for 30minutes, and the temperature of the high pressure vessel is reduced at the critical temperature or below. Thereby the resist 4 of the substrate 3 is developed, and an uneven pattern along an exposed pattern can be formed. In such a manner, the destruction of the substrate can be prevented, and waste liquid processing is extremely simplified.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or

application converted registration]  
[Date of final disposal for application]  
[Patent number]  
[Date of registration]  
[Number of appeal against examiner's decision  
of rejection]  
[Date of requesting appeal against examiner's  
decision of rejection]  
[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office